

**REMARKS**

Claims 1-7 and 9-11 are pending in the application.

**Rejection Under 35 USC § 102(b) over '981 (U.S. Patent 5,605,981)**

Claims 1-7 and 9-11 have been rejected under 35 U.S.C. §102(b) as being anticipated by '981. Applicants traverse this rejection. Reconsideration and withdrawal thereof are respectfully requested.

**The Presently Claimed Invention**

The presently claimed invention is directed to methods of preparing a catalyst for polymerization of aliphatic polycarbonates and polymerizing an aliphatic polycarbonate.

**'981**

'981 discloses a process for the preparation of a decomposable lactic copolymer polyester which exhibits a sufficiently high molecular weight, heat resistance and thermal stability and further exhibits a rigidity, flexibility and transparency. However, '981 fails to disclose or suggest a method of preparing a catalyst for polymerization of aliphatic polycarbonates in a solution that includes a templating agent and a method of polymerizing an aliphatic polycarbonate as in the presently claimed invention.

**Distinctions of the presently claimed invention over '981**

The Examiner is reminded that in order to reject a claim under §102, each and every element in the claim must be disclosed in the cited reference. Therefore, for '981 to serve as a prior art against the presently claimed invention, '981 must disclose all of the steps described in the inventive methods, for example, steps (i)-(iv) in claim 1 and steps (i)-(v) in claim 11. In the

instant application, Applicants note that '981 discloses that a polyester having functionalities is prepared and then react with a lactide to produce a copolymer. However, the templating agent in the presently claimed invention, which is used to prepare a catalyst for polymerization of aliphatic polycarbonates, is not used as a reactant in the reaction, but controls the morphology of a catalyst during the preparation of the catalyst. Accordingly, the presence of the templating agent is a significant feature of the presently claimed invention as it improves catalytic activity in comparison to conventional catalyst prepared without the templating agent.

The Examiner states at page 2 in the Office Action dated November 22, 2006, "Note that applicants' claim 1 remains so broadly set forth that the claim continues to be interpreted by the Examiner as anticipated by the references while remaining within the scope of the specification. Note importantly that *a polycarbonate is in fact a polyester carbonate* and thus a polyester in general."

In response to the Examiner's assertion indicating that a polycarbonate is a polyester carbonate and thus a polyester in general, Applicants submit that the polycarbonate in the presently claimed invention produced by reaction of CO<sub>2</sub> and alkylene oxide is a polycarbonate in which alternating copolymerization is completely carried out. Therefore, the polycarbonate in the presently claimed invention is not a polyester. Accordingly, '981 fails to disclose or suggest a method of preparing a catalyst for polymerization of aliphatic polycarbonates as in the presently claimed invention.

With regard to the catalyst, '981 discloses that generally known catalysts, organic metallic catalysts and several zinc derivatives, such as zinc chloride and zinc acetate can be used. These catalysts disclosed in '981 are also commercially available. However, the catalyst in the presently claimed invention is distinguished from such commercial catalysts disclosed in '981.

One of the significant features in the presently claimed invention is the use of a templating agent, rather than a zinc-based catalyst as in '981. Therefore, '981 fails to disclose or suggest use of any templating agent or actual process of making the catalyst as in the presently claimed invention.

Therefore, the inventive methods of preparing a catalyst for polymerization of aliphatic polycarbonates and polymerizing an aliphatic polycarbonate are distinguished from '981 disclosing merely the preparation process of lactic copolymer polyester. Accordingly, it is believed that '981 fails to anticipate the presently claimed invention.

**Rejection Under 35 USC § 103(a) over '981 in view of Li-Chen (Li-Chen et al., 1987)**

Claims 1-7 and 9-11 have been rejected under 35 U.S.C. §103(a) as being obvious over '981 in view of Li-Chen. Applicants traverse this rejection. Reconsideration and withdrawal thereof are respectfully requested.

'981 is discussed above.

**Li-Chen**

The Li-Chen reference discloses polymer-supported zinc catalysts which were prepared by the reaction of diethyl zinc with polymers containing carboxyl groups. However, Li-Chen fails to disclose or suggest a method of preparing a catalyst for polymerization of aliphatic polycarbonates in a solution that includes a templating agent and a method of polymerizing an aliphatic polycarbonate as in the presently claimed invention.

**Distinctions of the presently claimed invention over the cited references**

As discussed above, '981 fails to disclose or suggest use of any templating agent as in the presently claimed invention. The Li-Chen reference fails to remedy the deficiencies in '981 in

failing to disclose or suggest use of any templating agent to prepare a catalyst for polymerization of aliphatic polycarbonates as in the presently claimed invention. Li-Chen discloses merely that the polymer containing carboxyl groups acts as a supporter, but not as a templating agent.

Further, in the presently claimed invention, the templating agent is removed during the filtering step after completion of the catalyst forming reaction so that the templating agent is no longer present in the resulting catalyst as described at page 5 in the specification of the present application. In contrast, in the Li-Chen reference, the polymers are not removed and remain in the catalyst.

Therefore, Li-Chen is not applicable to the presently claimed invention and none of the cited references, independently or in combination, discloses or suggests the use of the templating agent to prepare a catalyst for polymerization of aliphatic polycarbonates as in the presently claimed invention. Accordingly, it is believed that the presently claimed invention is not obvious over the cited references.

### **Conclusion**

It is believed that the application is now in condition for allowance. Applicants request the Examiner to issue a notice of Allowance in due course. The Examiner is encouraged to contact the undersigned to further the prosecution of the present invention.

The Commissioner is authorized to charge JHK Law's Deposit Account No. **502486** for any fees required under 37 CFR §§ 1.16 and 1.17 and to credit any overpayment to said Deposit Account No. **502486**.

Respectfully submitted,

**JHK Law**

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